

PSAT Math Formula and Strategy Guide

The four Digital PSAT/NMSQT Math domains: Algebra, Advanced Math, Problem-Solving and Data Analysis, and Geometry and Trigonometry, with the fastest valid method for each question type.

SECTIONS	4	WORKED EXAMPLES	1	FORMAT	Print friendly
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How to use this guide

A formula you cannot place is not knowledge yet. Work the recall drill below before the questions.

- Classify the domain before solving — Algebra, Advanced Math, Data Analysis, or Geometry each reward a different first move.
- The digital test is adaptive by module: accuracy in module 1 sets the difficulty of module 2, so avoid careless errors early.
- Use the built-in Desmos calculator strategically — it is fast for graphing and checking, not always the fastest path to an answer.

1. Algebra

NAME	FORMULA	WHEN TO USE
Slope-intercept form	$y = mx + b$	Reading rate and starting value from a linear equation.
Solving a linear equation	isolate the variable with inverse operations	A single unknown in a linear relationship.
Systems of equations	substitution or elimination	Two linear equations, one solution point.
Linear inequality	same steps as an equation; flip sign when multiplying/dividing by a negative	A range of solutions rather than one value.

2. Advanced Math

NAME	FORMULA	WHEN TO USE
Factoring a quadratic	find two numbers with the right product and sum	Solving or simplifying a quadratic expression.
Quadratic formula	$x = (-b \pm \sqrt{b^2 - 4ac}) / (2a)$	Factoring doesn't work cleanly.
Exponent rules	$a^m \times a^n = a^{m+n}$, $(a^m)^n = a^{mn}$	Simplifying an expression with exponents.
Function notation	$f(x)$ means the output of function f for input x	Evaluating or interpreting a function.

3. Problem-Solving and Data Analysis

NAME	FORMULA	WHEN TO USE
Percent change	$(\text{new} - \text{old}) / \text{old} \times 100\%$	Describing an increase or decrease as a percent.
Ratios and proportions	cross-multiply to solve $a/b = c/d$	Scaling a quantity at a fixed rate.
Mean, median, range	sum/count; middle value; max-min	Summarizing a data set.
Reading a scatterplot	line of best fit shows the overall trend	Estimating a value or describing a relationship.

4. Geometry and Trigonometry

NAME	FORMULA	WHEN TO USE
Area of a triangle	$1/2 \times \text{base} \times \text{height}$	Finding the surface inside a triangle.
Pythagorean theorem	$a^2 + b^2 = c^2$	A right triangle's missing side.
Circle formulas	circumference = $2 \times \pi \times r$, area = $\pi \times r^2$	Working with circles.
Right-triangle trig	$\sin = \text{opposite}/\text{hyp}$, $\cos = \text{adjacent}/\text{hyp}$, $\tan = \text{opposite}/\text{adjacent}$	An angle and two sides of a right triangle.

WORKED EXAMPLE

A right triangle has legs 9 and 12. Find the hypotenuse.

- $a^2 + b^2 = c^2$
- $81 + 144 = 225$
- $c = \sqrt{225} = 15$

Check: 9-12-15 is a scaled 3-4-5 right triangle.

Notes and tutor hand-off

Bring this page to your next session so the tutor can start from what actually blocked you.

Which domain (Algebra, Advanced Math, Data Analysis, Geometry) needs more practice?

One question type where Desmos would have saved time:

Worksheet question numbers to review with a tutor:
